REMARKS/ARGUMENTS

Claims 1-16 and 27-30 are pending in this application. Claims 17-26 and 31 have been canceled. The pending claims have been amended to distinguish the cited prior art.

Double Patenting.

Claims 1-10 and 16-30 were rejected under the judicially created doctrine of obviousness-type double patenting over published Application No. 10/124,892. Claims 1, 13 and 14 of that application, referred to in the Office action, are directed to a capacitive detector for hand detection also being used as the antenna for transmitting or receiving signals from the input device. This is believed to be a non-obvious distinction and an element not included in the claims of the present application. Accordingly, the obviousness-type double patenting objection is believed to be inapplicable. In any event, no office action has issued in that application, and it is uncertain those claims will be maintained, and if they are, a terminal disclaimer can be required in that application. If, upon the indication of otherwise allowable claims, the examiner continues to believe a terminal disclaimer is required, applicant could submit one at that time.

Hinckley et al. claims 16 and 20.

Claims 16 and 20 were rejected as being anticipated by Hinckley. Claim 20 has been canceled, and claim 16 has been amended to set forth that the function activated is a light in the mouse. This is incorporating the limitation of canceled claim 18. A light turning on in the mouse will give a user visual feedback that the mouse has woken up or has detected the user's hand. This is not shown or suggested in the cited Hinckley published application.

It is noted that the Hinckley published application has a filing date later than the filing date of the provisional application from which the present application depends. However, much of what the Examiner cites was found in the earlier application of Hinckley, which resulted in US Patent No. 6,456,275, enclosed herewith for the Examiner's convenience.

Claim 18, with the feature added to pending claim 20, had been previously rejected over Hinckley in view of Goff et al. and Inoue et al. Goff shows a keyboard that is activated by keys being depressed or by hand presence being detected through a motion detector.

Inoue shows a capacitive touchpad that is used as a pointing device. It detects the finger position at different x-y intersections on the pointing device. None of the references show activating a light in a mouse in response to hand detection. Accordingly, claim 16, as amended, is believe allowable over the cited art.

Hinckley, Goff and Inoue.

The remaining pending claims were rejected over the combination of Hinckley, Goff and Inoue. Briefly, Hinckley was cited as teaching a hand detection circuit in a mouse, but not having a sleep mode circuit. Goff was cited as showing a sleep mode circuit. Inoue was cited as teaching a capacitive hand detection circuit.

Claims 1, 11 and 15 have been amended to clarify that a capacitive hand detection circuit is provided. The present invention thus claims the combination of a capacitive hand detection circuit and a sleep mode circuit that is awakened by the capacitive hand detector. Inoue was cited as teaching a capacitive hand detection circuit. However, it appears that Hinckley itself discusses capacitive detection in paragraph [0077] noted by the Examiner. In any event, the detection circuit of Inoue is a touchpad, and it is submitted that the obvious combination of Inoue with Hinckley would be to put a touchpad on the mouse, not to modify the capacitive hand detection circuit of Hinckley.

As acknowledged by the Examiner, Hinckley does not teach a sleep mode circuit, which is in the claims of the present invention. It is submitted that it is not obvious to combine Hinckley with Goff to produce the present invention. Goff shows two different types of power management awakening, the first being simply that the keys are activated. This is a typical method, when a user strikes a key on a keyboard or other device, the user clearly wants to use the device. This does not require detection of the hand, but simply that a key has been depressed. Goff also mentions the ability to detect a hand near the keys by motion detection. Again, Goff is detecting the hands about to press the keys, using the same line of reasoning as depressing the keys themselves.

Hinckley, on the other hand, uses hand detection to bring up a special display on the monitor, not to activate from a sleep mode. The hand detection of Hinckley is placed on the

body of the mouse, not near the input keys as in Goff. It is submitted that it is not obvious to apply a sleep mode circuit directed to activation of keys to a hand detection circuit which is placed away from the keys and is used for an entirely different purpose.

Accordingly, it is submitted that the remaining claims are non-obvious over the cited art. The dependent claims are believed to be non-obvious for the same reasons, as well as for additional reasons, some of which are mentioned below.

Capacitive hand detector inside the housing.

Claim 4 has been amended to set forth that the capacitive hand detection circuit is mounted inside the top of the housing, such that a portion of the housing insulates the user's hand from the capacitive hand detection circuit. Claim 11 has been similarly amended. Hinckley, on the hand, shows a touch sensor mounted on the outside of the mouse housing, where the user's hand comes directly in contact with it. The undersigned could not find any reference in Hinckley or any other reference to a capacitive hand detection circuit being inside the housing. This is not new matter, being disclosed in the second paragraph of the Summary, page 2, line 31 to page 3, line 3, and is illustrated in Fig. 5 and the accompanying text. Accordingly, these claims are believed to be allowable for this additional reason.

Local ground simulating earth ground.

Claims 5, 11 and 15 additionally set forth multiple electrodes for the capacitive connection with the user's hand and circuits for determining their time for charging and discharging the capacitance on the first and second electrodes. These elements are directed to the aspect of the invention set forth in the second paragraph of the Summary bridging pages 2-3. For a wireless device, earth ground is not available. The present invention uses two electrodes, both capacitively coupled to the hand at the same time, with the circuits being driven in opposite directions so that earth ground can be simulated by the local ground. This feature is not discussed in any of the cited references. The cited references appear not to have recognized this problem with a wireless device, either because they were relying on a wired device or because the device was not actually built.

The Office action refers to "simultaneously charging and discharging of capacitance coupled to the electrodes, and producing a hand detect signal", referring to page 5, paragraph [0077] of Hinckley. However, the undersigned could not find such a reference in that paragraph. The paragraph discusses a conductive film with capacitance and a capacitive measuring circuit, without providing any details of how that would operate.

The Office action subsequently refers to Inoue as including first and second electrodes and circuits for detecting the charging/discharging capacitance, referencing the Abstract and col. 4, lines 29-53. Inoue is direction to a touchpad attempting to determine the capacitance at each of a number of nodes. Inoue faces the problem of having a very small current due to the size constraints of having a grid of capacitors and needing to detect capacitance at each node. Inoue addresses this by charging and discharging the capacitors in synchronism to double the size of the pulse by detecting the difference between the level of the signals, rather than simply detecting a single pulse from ground. Inoue is not directed to the problem of a wireless device not having an earth ground. These claims have been amended to indicate that the circuits produce an internal virtual ground, which is not disclosed or suggested by Inoue. In addition, it is not obvious to combine Inoue with Hinckley to produce the present invention because they are directed to different purposes as discussed above. A likely combination would simply place the touchpad of Inoue on a mouse in place of one of the buttons or as an additional button, and not use it for the hand detection circuit. In addition, absent recognition of the problem of the absence of an earth ground in a wireless device for such a capacitive hand detection circuit, there is no motivation to combine them in this manner.

Measuring charging *time* not shown.

Inoue produces a differential signal from the level of charge on two capacitors. In the present invention, set forth in the above claims, the level is not measured, but rather the time for charging or discharging the capacitance is measured. As discussed on page 6, lines 16-26, by adding the relative charge and discharge times, any cumulative change in capacitance due to the hand can be detected. This system compensates for parasitic capacitance that does not vary

depending on whether the hand is present or not. Thus, a system is provided that is self-calibrating without factory adjustments.

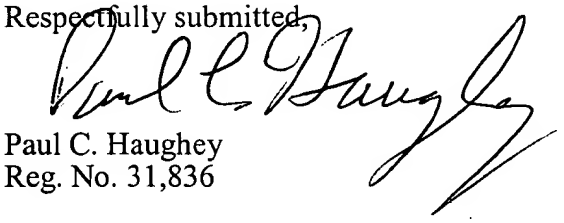
Inoue does not show such circuits for determining the *time* of charging or discharging, rather simply measuring the *level* of the charge in positive or negative directions to produce a larger, differential signal. Because of the different purpose of Inoue, that of increasing the size of the signal, it would not be obvious to modify Inoue to add a timing circuit for doing detection by relative charge and discharge *times*.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,



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Enclosure
- US Patent No. 6,456,275

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